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Approved For Release 2002/06/17 : CIA-RDP78B04747A000700050004-6

NPIC/TDS/D-1098-67
25 October 1967

MEMORANDUM FOR: Assistant for Technical Development, NPIC

THROUGH: Chief, DS/TDS

SUBJECT: Sine-Wave Test Device

25X1A

The laboratory model of the Sine-Wave Test Device was delivered [] in March 1967. Since that time, this device has been undergoing in-house evaluation by the Exploratory Development Laboratory, in order to determine the desirability to have built a portable, field model for use by TDS equipment development contract monitors. Results of this in-house evaluation have been discouraging to date in that the evaluators have not been able to obtain consistent data on the device. The device did, however, pass the performance specifications as stated in the contract and was accepted on that basis. It is recommended that this contract be closed and that the portable model not be built at this time. It is also suggested that EDL continue evaluation of the laboratory model to determine if it can be modified so that it does produce consistent data. If good data can, somehow, be acquired with this device, we can then reconsider a portable model in FY-69.

25X1A

The contract with [] specified that both models would be produced; however, the work on the first model encountered so many unforeseen technical difficulties that all of the contract funds were expended upon it alone. (In fact, [] of their own funds in order to complete the first model.) To build the second model (the portable unit) would have had to be performed with overrun funds. Since we are not going to buy the second model, a "down-ward" change-in-scope to the contract will have to be effected by the Office of Logistics in order to close out this contract.

25X1A

Declass Review by NIMA/DOD

[]
Chief, Imagery System Br/TDS

Distribution:

- Original & 1 - Addressee
- 1 - NPIC/TDS/DS
- 2 - ISB (13015)

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Excluded from automatic
downgrading and
declassification

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NFIC/TDS/D-1107-67
30 October 1967

MEMORANDUM FOR: Deputy Chief, Technical Development Staff

SUBJECT: Evaluation of Sine-Wave Test Equipment

25X1A 1. During the past four to five weeks, I have worked with [redacted] of our Exploratory Development Laboratory in evaluating the Sine-Wave Test Equipment built by [redacted] 25X1A

2. Since I demonstrated an ability for obtaining fairly consistent readings using this equipment, I was elected to take numerous readings at different spatial frequencies for use in the evaluation. This served the dual purpose of furnishing data for John's more detailed evaluation report and allowing me to make an objective study of the instrument. [redacted] 25X1A
[redacted] f/3.5, 35mm lens, whose modulation transfer function curve had been computed by the National Bureau of Standards, was used as the test object.

3. While working with the Sine-Wave Test Equipment, it was noted that:


- a. Taking numerous readings sometimes resulted in a noticeable eye irritation and an associated headache.
- b. A variation in readings occurred when reading at the same spatial frequency in two different target groups, i.e., the maximum frequency in target group two and the minimum frequency in target group three, both of which were 100 cycle/millimeter bar targets.
- c. Matching the bar target with the sine-wave filter by magnification adjustment of the zoom microscope was sometimes difficult.
- d. In order to obtain on axis readings at the different spatial frequencies, the equipment had to be translated in two dimensions.

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SUBJECT: Evaluation of Sine-Wave Test Equipment

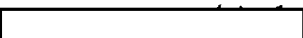
4. Commenting on the noted peculiarities of the equipment:
 - a. The discomfort problem referred to in sub-paragraph a. of the preceding paragraph could apparently be eliminated by careful focusing of the target image.
 - b. Influence of the surrounding target area is believed to contribute to the variation described in sub-paragraph b..
 - c. The latter two items set forth in the preceding paragraph made operation of the equipment somewhat difficult but not impossible.
5. Curves depicting the modulation transfer function of the test lens have been plotted on the attached graph. Although the three test curves are based on readings at a limited number of spatial frequencies, they show that a variation exists between sets of readings taken at different times.
6. Based on my limited exposure to the Sine-Wave Test Equipment, I question the accuracy of the instrument. Also, a definite degree of care and precision in using the equipment is indicated. This might preclude field use by contract monitors as proposed.


Imagery Systems Br/TDS

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13015
NPIC/TDS/D-1098-67
25 October 1967

MEMORANDUM FOR: Assistant for Technical Development, NPIC
THROUGH: Chief, DS/TDS
SUBJECT: Sine-Wave Test Device

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NPIC/TDS/DS: [] (25 Oct 1967)

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NPIC/TDS/D-1008-67
8 September 1967

MEMORANDUM FOR: Chief, Exploitation Systems Branch

SUBJECT : Sine Wave Test Equipment

1. The equipment presently in-house appears to have a basic fault in the design. The input of the system is a square wave which is supposed to be cancelled by a sine wave in the output. In reality these do not cancel and the result is a series of waves. Because the system is dependent upon a human eye to determine the "null" point and because the "null" point is in reality a series of waves itself, it is almost impossible to determine where the "null" point is.

2. I would suggest that the square wave target be replaced by another sine wave target. This, I think, would improve the system considerably, but even that may not make the equipment accurate enough for our needs. To perfect a device to measure modulation will probably require that the human eye be replaced by a more objective measuring system.

Exploitation Systems Branch, DS/TDS

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